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Three new Mallophaga from North American Birds.

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(Plate XXVIII.)

Goniodes zenauidurae n. sp. (Pl. XXVIII, figs. 1, 4.)

Three females (Bishopp No. 5258) from a mourning dove, *Zenaidura macroura* (L.), Aberdeen, South Dakota, June 3, 1915, W. E. Dove, Coll.

Type No. 21606, United States National Museum.

This species is nearest *G. damicornis* N. from which it differs in the occipital outline, shape of prothorax, character of lateral abdominal plates, and the arrangement of hairs and spines.

♀. Total length 1.80 mm.; length of head .468 mm.; length of prothorax .108 mm.; length of metathorax .252 mm.; length of abdomen .972 mm.; width of head across temples .666 mm.; width of prothorax .360 mm.; width of metathorax .504 mm.; width of abdomen .765 mm.



Head about two-fifths again as broad as long; front regularly convex, with eight short prickles; antennae in a narrow, shallow emargination with second joint longest; eye not noticeable, without a prickle; from the antennal sinuses the temporal margins diverge considerably and then converge most abruptly forming prominent angles at which are located a short prickle and a long hair; between the angle and the occiput another long hair, and a prickle at the inner end of posterior temporal border; the occipital border is strongly emarginate immediately before the lateral margins of the prothorax with a resulting strong convexity between these. Head color pale; with darker, broad marginal frontal bands, produced posteriorly on each side as a much darker bar, which terminate opposite the hind borders of antennal sinuses; temporal bands interrupted across the bases of antennae but extending from the dark ocular blotches, increasingly fainter, to the temporal angles; mandibles and oesophageal sclerite amber-colored; a rather narrow, brown band along the concave and convex portions of the occipital margin; broad, conspicuous occipital bands extend nearly to the antennal bands.

Prothorax trapezoidal, with lateral margins converging somewhat anteriorly, and posterior margin nearly straight; the latero-posterior angles are narrowly truncate, and each bears a strong hair; broad, dark lateral borders. Metathorax in outline resembling an acorn cup, with posterior-lateral regions rounded, and each bearing a long and a shorter hair; posterior margin produced on abdomen as a prominently rounded lobe, and bearing a group of six strong spines; an amber-colored yoke-like blotch involves the entire segment, and a broad curving band extends along each side into the first abdominal segment. Legs very pale, with somewhat darker marginal borders.

Abdomen elliptical, widest on fourth and fifth segments; middle region of abdomen uncolored; faint lateral bands and trigger-shaped, faint lateral blotches on segments three to six, inclusive, which encroach slightly onto the segments ahead; segments two to six, inclusive, also with a tad-pole-shaped blotch at each lateral posterior angle; segment one bare of hairs; segments two and three with a prickle at each angle; segment four with two shortish hairs at angles; segment five with two spines and a long hair at each angle, and a strong hair on each side nearly half way to the middle; segment six with two strong hairs at the angles, and a strong hair on each side nearly half way to the middle; segment seven with about eight hairs along the rounded posterior margin.

Laemobothrium intermedium n. sp. (Pl. XXVIII, figs. 2, 5.)

A male and two immature specimens (McGregor No. 82, or No. 271 of the Washburn Minnesota collection) from sparrow hawk, *Falco sparverius*, and a single male (Bishopp No.

3072) from the same host, Uvalde, Texas, March 8, 1914, coll. D. C. Parman.

Type No. 21607, United States National Museum.

This species is probably referable to *Laemobothrium* on account of the presence of the prominent swellings before the eyes, the absence of motile muscular lobes on the under side of forehead, and owing to the body length exceeding 5 millimeters. On the other hand, the shape of abdomen, outline of front of head, almost entire absence of ocular emargination, and the general markings, are much more suggestive of *Physostomum*, and our species may well be the link that obliterates the present separation into the two genera. Perhaps nearest *L. laticolle* N. from *Falco subbuteo*.

♂. Total length 6.03 mm.; length of head 1.140 mm.; length of prothorax .585 mm.; length of metathorax .517 mm.; width of abdomen 3.735 mm.; width of head across temples 1.260 mm.; width of prothorax 1.057 mm.; width of metathorax 1.35 mm.; width of abdomen 1.710 mm.

Head slightly wider than long; ground color pale amber; ocular emargination almost lacking, head suddenly and greatly contracted abreast of the mandible bases, sides of forehead converging to the evenly rounded convex front; temples at first diverging slightly, and then converging to the sharply rounded occipital corners; occipital margin deeply concave with a slight median convexity; antennae concealed in fossae; labial palpi barely projecting; mandibles pale with teeth blackish; antennal fossae rimmed medially and posteriorly with heavy black borders extending inward and backward to form Y-shaped blotches; a black, cleft blotch on each side at inner angle of forehead contraction; occipital border margined with blackish brown bands which give off short rudiments of occipital bands; in front of mandibles a crescent-shaped fossa, convex anteriorly; two strong spines arise at each frontal angle between which occur about 30 hairs and prickles of various lengths, a score or more of long and short hairs arise on the lateral prominences, two weak hairs at the front of each antennal fossa, a long hair arising just over the emarginate eye, several short hairs along the anterior half of temples, a long and a short pustulated hair at the temporal angles, a long pustulated hair at the base of the temporal lobe, and three or four longish hairs along the temporal margins.

Prothorax roughly quadrangular, a sharp constriction at each anterior angle forms a sort of neck-like extension which fits into the occipital concavity; the posterior halves of the lateral margins converge quickly and end in the posterior-lateral lobes which are

formed by the deep emargination of the posterior border; two long hairs arise from the angle just behind the frontal constriction; two black blotches on the front margin, a black fleck bordering the constriction inwardly, a large black blotch just behind constriction extending to center of lateral border and is continued fainter backward and inward, a narrow, curving, underlying bar extends backward and inward from a point before the anterior lateral flecks; a pair of black anterior metathoracic blotches show plainly through the hyaline posterior-lateral lobes, and from the inner points of these, fainter bars run inward and backward, finally paralleling the median line; six long hairs occur along the anterior portions of the lateral margins and four shorter ones from the posterior lobes; a peculiar H-shaped plate involves the entire segment through the cross-bar of which a faint clear stripe intersects. Metathorax and mesothorax, which are indistinguishably fused, are continuous with the abdomen; two short spines at each anterior angle, twelve long hairs along the margin of the segment and a central transverse series of six shortish hairs; margined laterally by a dark brown border which widens greatly posteriorly; a narrow band parallels this just mediad of same; another narrow band arises inwardly on each side which runs backward and inward, and meets transversely on the first abdominal segment; from the hindmost end of the lateral border horn-like bars are projected backward onto the first and second abdominal segments. Legs colorous with ground color and thorax, with dark marginal borders.

Abdomen narrowly elliptical, with no marginal constrictions between segments; each segment with three or four long hairs and three or four short hairs laterally; segments one to eight, inclusive, with a transverse row of long spines at the posterior margin as follows: Segment one, 14; segment two, 14; segment three, 16; segment four, 16; segment five, 10; segment six, 14; segment seven, 9; segment eight, 6; first and eighth segments the shortest; terminal segment with a marginal fringe of about 20 hairs; segment one with a median, triangular, brownish blotch whose apex invades the metathorax; remaining segments (excepting the last) each with a transverse band of same color, which are shallowly emarginate laterally, thus leaving a clear region inside the brown lateral bands which are lined within with a parallel, semi-hyaline edge.

Physostomum melospizae n. sp. (Pl. XXVIII, figs. 3, 6.)

Two females (McGregor No. 90, or No. 178 of the Washburn Minnesota collection from the song sparrow, *Melospiza melodia*, St. Anthony Park, Minnesota. Possibly nearest *P. sucinaceum* Kell. from the western flycatcher; not at all like the *Physostomum* of the golden-crowned sparrow.

Type No. 21608, United States National Museum.

♀. Total length 2.17 mm.; length of head .53 mm.; length of prothorax .20 mm.; length of metathorax .30 mm.; length of abdomen 1.15 mm.; width of head across temples .45 mm.; width of prothorax .36 mm.; width of metathorax .47 mm.; width of abdomen .50 mm.

Head a little longer than wide; front evenly rounded; and sides of forehead somewhat concave; temples converging rotundately, but produced very slightly backward with sharply rounded posterior angles; occipital margin nearly a straight line; eye with a conspicuous black fleck; palpi considerably passing the margins of head; the labral lobes quite conspicuously passing the margin of head; ground color transparent, with a large, amber-colored, urn-shaped blotch occupying center of head, at the anterior end of which occurs a straight, transverse bar of the same color; antennal fossa bordered posteriorly with a faint blotch which extends toward the occipital angles; a faint, narrow band surrounds two clear, circular areas abreast of the palpi; 12 prickles occur along the front margin, four prickles arise on each side even with the antennae; two long hairs and five short ones arise from each temporal border between the eye fleck and the occiput; a broad, pale band borders the occipital margin.

Prothorax, roughly hexagonal with rounded angles; the antero-lateral facets with a weak hair and a longer one; a long hair and a prickle at the postero-lateral angles; four prickles along the posterior border; general color of segment faint amber, with a faint, narrow band paralleling the margin, and with other faint, linear blotches. Metathorax with a slight swelling on anterior third of sides, which bear each two prickles; general color resembling that of prothorax, with a central pale bordered blotch, and pale marginal bands. Legs rather long, pale, with faint marginal bands.

Abdomen with sides very flatly convex, subparallel; a long hair on the posterior angles of segments one to seven, inclusive, and with a prickle at the angles of segments one to three, inclusive; terminal segment bluntly rounded, with four longish hairs and a fringe of ten prickles; lateral bands almost colorless.

EXPLANATION OF PLATE XXVIII.

- Fig. 1. Female of *Goniodes zenaidurae* n. sp.
2. Male of *Laemobothrium intermedium* n. sp.
3. Female of *Physostomum melospizae* n. sp.
4. Left leg III of female of *Goniodes zenaidurae* n. sp.
(viewed ventrally).
5. Right leg III of male of *Laemobothrium intermedium* n. sp.
(viewed ventrally).
6. Left leg III of female of *Physostomum melospizae* n. sp.
(viewed ventrally).

All figures drawn by the author with the aid of camera lucida with little attempt at restoring symmetry.